## REMARKS

Claims 1-3, 5-12, 15, 16, 18, 19, 21 and 23-25 are currently pending, with claims 1, 7 and 11 being in independent form. No new matter has been added. Reconsideration of the application is respectfully requested.

The Examiner has failed to indicate Applicant's claim for priority or that the U.S. Patent Office has received the priority documents. A notice indicating Applicant's claim for priority and that the priority document was received is requested.

In the May 9, 2006 Office Action, independent claims 1, 7 and 11, and dependent claims 2, 3, 5, 8-10, 12, 15, 16 and 23-25 were rejected under 35 U.S.C. §103(a) as unpatentable over "Design of Interfaces for TCP/IP Over Wireless," IEEE, 1996 ("*Chaskar*") in view of "Gateways and RFCN (Reverse Feedback Congestion Notification)," IEEE, Feb. 5, 1997 ("*Ziegler*") or U.S. Patent No. 6,438,101 ("*Kalampoukas*"). Claims 6, 18, 19 and 21 were rejected under 35 U.S.C. §103(a) as unpatentable over *Chaskar* or *Ziegler*, and further in view of U.S. Patent No. 6,608,832 ("*Forslow*"). For the following reasons, it is respectfully submitted that all claims of the present application are patentable over the cited references.

*Chaskar* discloses an analytical framework for estimating TCP performance using link layer error recovery, taking into account specific wireless characteristics and the size of a wireless-wireline interface buffer (see Abstract; pg. 200, left column, 1st ¶). *Chaskar* (Abstract) states, "TCP has been recently shown to perform poorly in the presence of random loss, its performance over a lossy wireless link which is subject to fades and other impairments may be unsatisfactory. *Chaskar* thus teaches that applying the wireline TCP congestion control mechanism to a wireless channel causes problems.

*Chaskar* (pg. 199, 2nd paragraph) states, "buffer overflow at the interface leads to the occurrence of loss being seen by the end-to-end protocol and a consequent reduction in window size. This phenomenon would not be a problem if TCP could actually cut back its window in response to a bad state for the wireless channel, and then could increase it back rapidly to take advantage of a good state. However, feedback delay ... [implies] that TCP cannot keep up with the fluctuations of a typical wireless channel. Thus, without some additional mechanism, TCP performance over a wireless link could be disastrous". *Chaskar*, however, fails to teach or suggest any additional mechanism. Rather, *Chaskar* teaches an analytical framework for predicting TCP performance.

In contrast, the claimed invention solves the problem described in *Chaskar* by a network element which is arranged to buffer data packets transmitted by a sender, examine and modify the header data, detect transmission conditions comprising buffering conditions of data packets at the network element and radio conditions and modify the window size accordingly. *Chaskar* fails to teach or suggest such a claimed network element, as recited in independent claim 1.

The Office Action (pgs. 3 and 5) states:

> The network element is arranged to modify the window size to a lower value when it detects decreasing quality of transmission conditions (Page 199, Sec 1, 2.2, 3, Abstract); implicitly teaches that the network element is arranged to quit modifying the window size when it detects that the quality of the transmission conditions is increasing and allow the receiver to set the window size normally (Page 199, Right col., First and second Par).

However, Applicant respectfully asserts that it is not possible based on the teachings of *Chaskar* to derive that the interface buffer size is modified in accordance with channel conditions detected by a network element. *Chaskar* merely teaches that TCP is not able to quickly follow wireless channel fluctuations and that an additional mechanism is needed. However, there is nothing here with respect to the structure of Applicant's claimed network element.

The Examiner acknowledges that *Chaskar* differs from the claimed invention in that *Chaskar* fails to teach a receiver that is arranged to acknowledge each received data packet by an acknowledgment message containing header data. The Examiner cites *Zielger* or *Kalampoukas* in an attempt to cure this deficiency of *Forslow* (Office Action, pgs. 3 and 5, respectively). However, the combination of *Chaskar* and *Zielger* or *Kalampoukas* fails to teach or suggest the limitation "transmission conditions comprising buffering conditions of data packets at [a] network element and radio conditions," as recited in independent claims 1, 7 and 11.

*Ziegler* discloses a Buffer Utilization Control (BUC) algorithm that is executed in a "gateway" (see pg. 410, Abstract). *Ziegler* (pg. 410, Abstract, lines 12-13) discloses a signaling mechanism called Reverse Feedback Congestion Notication (RFCN). *Ziegler* (Abstract, lines 14-15) teaches that RFCN is applicable to transport protocols, such as TCP. *Ziegler* (Abstract, lines 15-17) teaches a receiver transmits its available buffersize to a sender in a window-field in the header of an ACK-header during window flow control. *Zeigler* (Abstract, lines 17-20) teaches that the BUC algorithm may update the credit value in this window field to its computed window to control the transmission rate of a data-sender. In short, the BUC gateway disclosed in *Ziegler* is

unable to detect radio conditions. *Zeigler* thus fails to teach or suggest independent claims 1, 7 and 11.

*Ziegler* (pg. 411, 1st paragraph) teaches that the main goal of BUC is to keep the overall utilization at an output-port in a desired range, and while achieving this, provide fairness to controlled conversations. *Ziegler* (pg. 411, 1st paragraph) states the BUC algorithm computes a window depending on the state of a conversation's queue during a well defined time interval in order to control the flow of conversations. However, *Ziegler* fails to teach or suggest that transmission conditions comprising buffering conditions of data packets at a network element and radio conditions are detected, as recited in independent claims 1, 7 and 11.

*Ziegler* (pg. 411, 2nd paragraph) teaches that each conversion maintains two per-conversation-queues at two distinct output-ports at the BUC gateway. *Ziegler* (pg. 411, 2nd paragraph, lines 3-5) states, "from the viewpoint of a data-sender, one of these per-conversation-queues is the 'forward queue', i.e., the queue storing the packets sent by the data sender". *Ziegler* (pg. 411, 2nd paragraph, lines 3-5) states, "the other queue storing the other per-conversation-queue is the 'backward queue', i.e., the queue storing the ACKs to be received by the data-sender". *Ziegler* (pg. 411, 2nd paragraph, lines 7-9) states, "the RFCN algorithm requires that each forward queue have access to the data structures of its corresponding backward queue and vice versa". *Ziegler* (pg. 411, 2nd paragraph, lines 9-13; Fig. 1) teaches that if used in combination with RFCN, the BUC algorithm calculates the window at the forward queue and sets the header field of the ACKs at the corresponding backward queue. There is nothing in the foregoing sections of *Zeigler* to teach or suggest anything associated with radio conditions, or otherwise.

*Kalampoukas*, on the other hand, teaches a method for controlling congestion in an internetwork having at least one controlled network segment and at least one non-rate-controlled network segment coupled by a router to prevent large queues of packets from accumulating in the router, thereby potentially causing congestion and buffer overflows in the routers (see col. 2, line 63 thru col. 3, line 1). *Kalampoukas* (col. 3, lines 1-5) states, "the window size of connections passing through the routers are controlled based on the congestion level in the routers, so as to control the flow of packets into the internetwork, thereby controlling congestion". *Kalampoukas* (col. 3, lines 5-7) teaches that this results in improved throughput and fairness in the internetwork while minimizing losses due to buffer overflows in the routers. However, *Kalampoukas* fails teach or suggest the limitation "transmission conditions comprising

buffering conditions of data packets at [a] network element and radio conditions," as recited in independent claims 1, 7 and 11.

*Kalampoukas* (col. 10, lines 24-28; Fig. 6) teaches destination device 125 sends an acknowledge for the packet having byte 21000 with a window size value of, for example, 8000 bytes, in the case where destination communication device 125 successfully receives the data packets with a byte range of 20001-21000. However, there is nothing here to teach or suggest all of the limitations recited in independent claims 1, 7 and 11. That is, the routers disclosed in *Kalampoukas* are also unable to detect radio conditions.

*Forslow* has been cited by the Examiner based on the failure of *Chaskar*, *Ziegler* and *Kalampoukas* to teach or suggest that the " network element comprises an SGSN network element for performing header compression". However, *Forslow* also fails to teach or suggest the limitation "transmission conditions comprising buffering conditions of data packets at [a] network element and radio conditions," as recited in independent claims 1, 7 and 11. Consequently, the combination of *Chaskar*, *Ziegler*, *Kalampoukas* and/or *Forslow* fails to render independent claims 1, 7 and 11 obvious and unpatentable and thus, reconsideration and withdrawal of all the rejections under 35 U.S.C. §103(a) are in order, and a notice to that effect is requested.

In view of the patentability of independent claims 1, 7 and 11, for the reasons set forth above, dependent claims 2, 3, 5, 6, 8-10, 12, 15, 16, 18, 19, 21 and 23-25 are all patentable over the prior art.

Based on the foregoing amendments and remarks, this application is in condition for allowance. Early passage of this case to issue is respectfully requested.

It is believed that no fees or charges are required at this time in connection with the present application. However, if any fees or charges are required at this time, they may be charged to our Patent and Trademark Office Deposit Account No. 03-2412.

Respectfully submitted,
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